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SMALL FRUIT CULTURE WITH POULTRY

—BY—

WICK HATHAWAY

THE VETERAN POULTRY BREEDER AND
HORTICULTURIST

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Number of Plants Required to Set One Acre.

Strawberries.

12x36	inches—14,520
12x48	inches—10,890
15x48	inches— 8,712
20x36	inches— 8,713
18x36	inches— 9,680
18x42	inches— 8,297
18x48	inches— 7,260
18x54	inches— 6,453
18x60	inches— 5,808

Grapes.

7x 7	feet—888
7x 8	feet—787
7x 9	feet—698
7x10	feet—692
8x 8	feet—680
8x10	feet—605
8x10	feet—544
8x11	feet—495
8x13	feet—453

Raspberries, Blackberries, etc.

3x5	feet—2,904
3x6	feet—2,420
3x7	feet—2,077
3x8	feet—1,158

FEB 9-1917

RETURN TO POMOLOGY
SECTION OF NOMENCLATURE

INDEXED.

Introduction.

Madison, Ohio, August 1st, 1908.

TO THE READER:

I have revised and enlarged my treatise on small fruit culture with poultry as a result of hundreds upon hundreds of inquiries asking how to grow this or that variety? When to set plants? Would it pay to quit a good job at average wages to go into growing small fruit, etc.? And so many, many questions from my patrons who buy plants, etc., from me, as well as others. As my plant and poultry business is increasing so rapidly, I will be unable to give a written reply to so many separate questions. So I have prepared this booklet covering the subject, I hope, in a thorough and comprehensive manner, and ask a small charge for it, which I know will prove to be worth many dollars to those who are earnest workers in this fascinating and profitable occupation.

Yours truly,

WICK HATHAWAY.

SMALL FRUIT FARMING WITH POULTRY.

TREATISE ON GROWING SMALL FRUITS.

—By Wick Hathaway—

For those who know how to get the most out of a given area of land, general truck farming has always been a paying venture. It is not how many acres, but how good and well tilled, that produces the desired results, and it will be a long time yet before all of the people will realize that a few acres well tilled are better than many acres skinned over. Some of the people have long been and are still reaping the certain benefits to be derived from thorough and careful cultivation, and others will sooner or later get their eyes open to the fact that it pays. Poultry, small fruit and truck farming go very well together, but of course, it is necessary to keep the three separate. Although I have been through the experience of general truck raising, I have dropped everything in the gardening line except onions, potatoes, tomatoes and celery, with onions and celery the leaders, and substituted the growing of small fruits and plants instead, while at this time I am interested in a general line of nursery and seed business, as well as growing of small fruits, fancy poultry, etc. It has been some sixteen years since I began the growing of small fruits, on a large scale. I figured about like this: That to get ahead on a farm one must manage to have a continual income every month in the year from some source or other, and I have the system down to a nicety. In general farming it requires a season to grow the crop, and as a rule but a few different varieties of crop are grown. These, of course the staple ones, of some one or more varieties of grain, potatoes, or say live stock. But by the time the harvest is over, the crop sold, the labor paid for, the balance in hand is barely sufficient to carry the farmer and his family through the

winter. In fact, some are actually out of money by the next planting time and again run in debt for necessities. So it goes, year after year, and many become accustomed to not expecting more than a living and a tog-out in blue overalls. Hence I say, produce several branches of farm product which will harvest an income every month in the year. Keep everything in its purity and have a system. It will not then be long before your neighbor will come to you for stock, seed or plants. In this branch of the business, if of show stock of poultry, the sales begin in the fall and continue through the winter gradually changing from show stock to breeding stock, as the hatching season approaches, which brings with it orders for eggs for hatching in the spring. Your stock being pure, you are always ready for the fancy stock trade, and if your stock is so many in number as to produce more egg than the demand for fancy eggs for hatching, they are as good as any crossbred production for the commercial markets. In fact, pure bred fowls or eggs are always staple at the commercial prices and cost no more to feed than a "Cheap John" dunghill. So by keeping the thoroughbred, one gets the benefit of fancy prices for what certainly would not be possible if the crossbred or dunghill fowl was continually tolerated. With the eggs for the hatching season on we also have our plant and general seed and nursery trade. When, hardly is this over than the small fruits are coming into ripening in their rotation, viz.: Strawberries, currants, raspberries, blackberries, when by the last of August the early onions, peaches or plums are ready, followed later by crops of onions and potatoes. During the summertime of crop growing, there has also been growing a fine lot of young poultry which is ready for the early fall show trade, etc. Hence the work for every month of the year is arranged so that an income can be had, and there should always be enough income to make a surplus, or lap-over, for the proverbial "rainy day." To derive all the benefits from this pleasant occupation one must bear in mind that an appropriation must be set aside for advertising and used for such, just as freely and cared for with as good judgment as the seed that is sown. I omitted to say, in reference to peaches, plums and fruit trees in general, that the hen yards should occupy the orchard of

such, which should be set for the purpose.

In Small Fruit Culture the strawberry is not only the best of all the small fruits as a yielder and profit maker, but it is more extensively eaten; in fact, it has been estimated that more strawberries are annually consumed than all of the combined product of raspberries, blackberries, currants, etc.

Fancy fruit growing not only is light work, but the most profitable by from 100 to 1,000 per cent. over any other general farm produce, depending of course upon quality of the crop and a market. With me the strawberry is my hobby, or specialty, though, as explained, I grow many varieties of other fruits.

The Strawberry.

I take for a main subject of this article, the strawberry, as it comes first of all fruits, it being a continuous grower in plant, one of the last of all vegetation to give up to winter's demand and among the first to send forth its bright green foliage in the early spring to gladden the heart of man.

How many thus are brought to a realization of the great value of this fruit, not until the season of its fruitfulness is upon us, and the depleted system through a craving appetite, so long confined to a monotonous fare of canned goods, or bread and water, during the siege of the long winter's blasts, calls for the flavor, the acids and the cooling, health-giving properties of this first ripening fruit, the luscious strawberry? Ah! Then it occurs with full force to those who have the conveniences to grow their own berries, but through neglect to have set out a few dozen or hundred plants the previous spring, that they must now either buy or go without. By the way, to the farmers who may read this treatise, I do not advise you to go into this business on a large scale if you cannot from one cause or another get help to set out, hoe and otherwise care for the growing plants and harvest the crop, but I do advise everyone who possibly can to set out enough plants to supply fruit for his own family. As a rule, one dollar will buy 100 plants of some of the best varieties, enough for an average family. God pity the man who has the land and cannot afford this. Farmers in this country, this day and age, should live, not merely exist, and they who persistently do without the family strawberry

bed are not using their wives, their children, nor themselves right. In spite of all this there are at least probably half the farmers who have not thought of the benefits of a strawberry bed. Those that have, found from the first year's experience that there was no trouble to dispose of the surplus to their less thoughtful neighbors. It inspires an insight of business for the children too, who may be favored with the income from the few surplus quarts or bushels they may have an interest in.

The strawberry, unlike most other plants, can be grown on any fertile soil, and in any climate where irrigation, or good drainage, is prevalent, as conditions may be, and produce an abundance of fruit. And here let me remind you that if there is any one thing which will tempt everyone—including the miser—to spend their money quicker than the big, luscious strawberry, those great big, fancy fellows, which, when so nicely displayed in attractive baskets and permeating the air with that fetching aroma or odor of their ripeness, goodness and flavor, then I do not know what will. Furthermore, the fruit agrees with most everyone. They are not only a great treat for the sick, and invariably bring cheerfulness to the invalid, but are enjoyed by the rich and poor alike. Not only does all humanity welcome the coming of this luscious fruit, but so do the bugs and birds of the air and the worms and insects of the earth. Given good cultivation and a fair chance there is usually a taste for all.

It seldom occurs to the uninitiated that 200 bushels of strawberries to the acre—field culture—when properly grown is only an average yield, nor that at 5 cents per quart means \$1.60 per bushel. It seldom occurs to the general farmer that 1 cent per quart variation from day to day in the price of small fruits means 32 cents per bushel, or more than the average has been for several years in succession for a bushel of oats or potatoes, neither of which will begin to yield the number of bushels per acre, under same fertility conditions, as the strawberry, of which 300 to 600 bushels per acre, are frequently produced. It is the small quantities and price at which our fruit is sold that makes a large profit. How often is the strawberry market less than 8 cents per quart, with strictly fancy stock at anywhere from 10, 12, 15, 20, or 25 cents per quart?

How many of my northern readers are from December to April able to buy lettuce at less than 20 cents per pound, hothouse production of course? Seemingly very reasonable, considering the season, but it is \$400 per ton just the same. Rather expensive grass, isn't it? In conclusion, I repeat that strawberry culture is an easy task, a pleasant and enlivening occupation. In fact, it is the grandest and most remunerative occupation of country life. When one becomes attached to it as a part of their labors, they will love the work and delight to see the plants thrive. Of strawberries, someone has said: "Doubtless God could have made a better berry, but doubtless God never did."

Location has little to do with making a success in growing strawberries, provided the soil is well enriched with preferably well rotted stable manure, and the land so lies as to always well drain. Raspberries and currants do not require so highly enriched land. But care must be taken to select a location, particularly for the raspberry, that will not prove too quick to dry out while the fruit is coming to maturity and ripening. Currants are not so susceptible to drouth as either the strawberry, raspberry or blackberry. A seeming peculiarity with the blackberry is the fact that it is the only fruit or vegetable which will be found in its wild or uncultivated state, often producing equal if not superior fruit in size and flavor to that obtained from the same parentage, when cared for under a high state of cultivation. I attribute this cause to the fact that the blackberry in its wild state, when found at its best, is grown on low wooded lands, or bordering on marsh. It tends to show that the accumulation of rotted wood, leaves and grasses not only are its natural fertilizer, but a necessity as a mulch. We do not find such conditions in our cultivated fields. Yet great crops of excellent fruit is produced. Why the blackberry has never been cultivated as near as circumstances will permit as found at its best when growing as nature provided, is the one reason in my mind why the blackberry has not been improved on, as have the strawberry, raspberry, currant and gooseberry.

Growing Fancy Strawberries requires land that will quickly drain surface water, but hold moisture. Soil highly enriched with well rotted stable manure

can always be depended upon to hold moisture, when often cultivated, while the plants are growing and winter mulched for the fruit season. Hence the secret in growing strawberries lies in proper drainage, plenty of barnyard manure and work faithfully applied. No crop will respond more quickly and pay better for good treatment than the strawberry. If an early crop is sought, choose the early varieties and select a southern slope to set them, one well protected from the western winds which blow so cold during the early spring when plants are in bloom, as to very often kill the blossoms, and fruit of course. In setting for late strawberries, rather a more unprotected or northern slope should be chosen and the later varieties set. The fruit can be forced back from ten days to three weeks very often by heavy mulching with straw, etc., in the winter, and not uncovering the plants until late in the spring. I have had excellent results in getting berries later than my neighbors from the same varieties, by practicing this method. Fine straw or leaves make the best mulch. Strawy manure from the stable is excellent, but is often so full of weed seed that a crop of weeds will grow almost as quick as the plants. In removing a mulch, I never take it only off the rows, raking off with a fork that which is loose, into the space between. This always leaves plenty of the finer mulch around the plants, which protects the berries from the dirt, and also holds moisture both in and between the rows.

Preparing the Land.

In preparing the land to set plants, it is better to begin in the fall by plowing the amount desired, then spread over one or two carloads of stable manure per acre. Allow this to lie until spring when the land should be fitted with a disc harrow until it is well pulverized, and the manure worked in, then smooth the land with a "plank float," or roller fitting it ready for marking. Always bear in mind that to set strawberry plants to make them live and do well the land must be firm and not lie up too light. On easily worked soils we use a hand marker, marking our rows three and one half feet apart one way. We set the plants one way of the row, about eighteen or twenty inches apart according to the variety, as some sorts are better plant makers

than others, which I will add, is also one reason that governs the prices of many varieties of strawberry plants.

Now that we have the land fitted, and ready to set the plants, it is all important that we know that we are setting pistillate, or staminate (bi-sexual) varieties or both, as all pistillate or imperfect sorts (the female of course,) see cut No. 2, must be planted beside of or with the staminate, or male plant, cut No. 1

No. 1.



**Bi-Sexual or
Male Blossom.**

plants are determined by their blossoms. The pistillate flower being devoid of stamens, is distinguished at a glance from the staminate flower, and also varieties that bloom and ripen fruit at about the same time should be set together. It is not material if the plants are set alternate, that is, pistillate, then staminate, etc., but much more preferable to set all pistillates in rows by themselves, and all staminate in rows by themselves. By so doing, if there should be a

difference in the color of the fruit of the two varieties when ripe, it is picked separate, where if the plants are set mixed, alternate in each row it is a mixed looking box of fruit when picked. Bear in mind, as a rule pistillate varieties are the heaviest yielders. and must have the staminate variety growing nearby to insure a crop, where with the staminate sorts, they will produce a crop as usual if set alone.

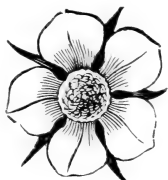
Best Time to Set Plants.

It is always best to set plants or trees in the spring though potted strawberry plants are ready to set in August and September, and earlier in some localities. October is also a good time to set strawberry plants, as all fall set plants should be growing in the spring before the land in some places can be fitted.

Setting the Plants.

A cloudy day is preferable, but where we are setting acerage, be it cloudy, cool or a scorchers, the work goes on; the plants when set right will live every time. Machines drawn by horses are now being used, not only to set strawberries, but tomatoes, cabbage and other plants of the like. But we still use the ordinary spade for making the holes for setting the plants. To work fast requires a system, and my method, though

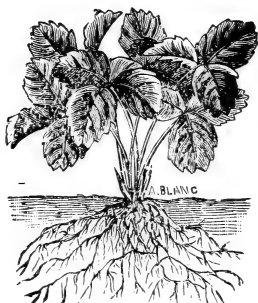
No 2.



Pistillate or

Female Blossom. perhaps the old way, is yet one of the good and sure ways. Three are required, one man starts with spade in hand, places the blade in the mark of the row, puts one foot on the spade, pushing the blade in the ground about six inches, give the handle a move back and forth, once as a rule, but as many times as necessary to leave an opening, He then moves one short step up the row and repeats the operation and so on. This work can be done very fast, as soon as one becomes used to it. Following immediately the hole maker, is another, a boy generally, with a basket of plants, dropping a plant to each hole. The plant dropper is followed by the third person, who on hands and knees sets the plants as soon as they are dropped. By this system the holes are made and plants set in each hole within a minute as a rule, but always before the hole has dried out. Thus the roots are thrust into fresh earth. The tops will wither, often dry up, but new shoots will grow right away. The main point in setting the strawberry plant is to spread the roots and get them down into the ground, pressing the earth about the bottom ends as well as about the crown of the plant which should be set even with the surface, see illustration No. 3. If the

No. 3.



Set Just Right.

and of plants, if read and heeded by those intending to set out strawberry plants.

For fruit only, we set three or six rows of pistillate sorts, then two to four rows of staminate, two rows of staminate, then three of pistillate, is the usual way for best results for a well fertilized crop. As soon as the plants have been set, we begin to cultivate with horse cultivator, one way of the rows, and hoe the plants by hand, or use the Iron King hand cultivator, which I have used for the last five seasons in place of the hand hoe for field culture.

The Matted Row.

The matted row will produce the largest crop of fruit. It is grown by allowing the runners to take root, beginning, say, after August 15th and by keeping the runners turned with the row. This is a most easy thing to do, if the cultivator has been kept going at least once a week, and the same way of the row each time. By so doing the new runners are turned in with the row and soon the new sets take root. We never allow the runners to grow until after the first of August, but cut them off, treat them as weeds, with the May, June and July cultivating, etc. This job is done by the use of a revolving disc, which is placed on the cultivator in place of the outside tooth. I use a Planet, twelve tooth, horse cultivator, which is made ex-

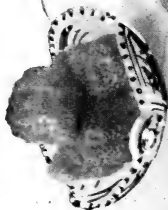
crown is set too low, the first rain that comes will wash the dirt in on top of the crown and smother the plant, while if the crown is set above the surface, it will wilt and die, for the reason that the new roots grow from the base of the crown. The old roots are not the life of the new plant longer than necessary to start a new root growth. We also keep all flowers picked off of new set plants. This explanation ought to save thous-

pressly with disc attachments for this purpose. The runners setting plants for the matted row keep throwing out new shoots and at each succeeding cultivation, we narrow up the cultivator a little so that the runners cover more ground in the row and when the row becomes eighteen inches or two feet wide, or as wide as wanted, the cultivator is run as narrow as can be made, so as to keep an open path between the rows. If some desire to grow mammoth berries exclusively, hill culture is the best method. This is done by simply setting the plants and keeping all the runners off. Each runner pulled off makes a new crown in the old plant, and by fall the single plant should have a dozen or more crowns. Each crown will produce from one to a dozen fruit stems, as to the variety. Many like to grow a few quarts of all monster berries. This is done at the expense of a full crop, by removing all of the fruit except the "king berry" from each stem, thus the strength of the plant of each fruit stem is given to the development of one berry on same principle that pulling or cutting of the runners throws the strength to crowns in one plant.

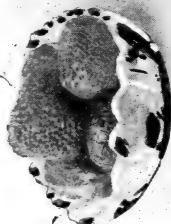
Hill Culture.

Hill culture is a whole lot of extra work that pays, and when done right and cared for, pays almost beyond belief. First is the variety to be used. It must be a heavy yielder of big berries. The best in this respect is Glen Mary, New York, Wm. Belt, Uncle Jim, Wick Hathaway's "Hundred Dollar," and Wick Hathaway's "Money Maker." These varieties set in hills, with the runners kept cut or pulled off, will stool out as large round as a half bushel measure. Each runner that has been removed should make a new crown in the plant from which fruit is produced. Thus it is easy to understand how some plants will produce berries by the quart or two quarts. Kivett explains his hill culture system in two different charts, showing that 40,000 to 50,000 plants or more can be set and kept in hill culture on one acre of land. Estimating a yield of one quart to each plant, would result a yield of from 1,200 to quite 1,500 bushels or more to the acre. Think of it. He claims that it has been done in a small way with the "Glen Mary" as the

variety used. The charts show a plat laid off in rows across the field, the first three rows being from nine to eleven inches apart each way. Then a wide space, say eighteen inches, or one row omitted to make a pathway, etc. Of course this plan requires more labor on an acre, but the possible returns to be derived are, first larger fruit and certainly more of it, and second, the bed can be kept cleaner of weeds, and always mulched because all of the work necessarily is by hand, using the hoe or Iron King hand garden cultivator tools, and third, the mammoth berries certainly would bring the top price where ever sold. I have grown strawberries by hill culture in a small way, but Mr. Kivett has gone us all one better, though it's nothing more or less than intensive farming on a fine scale, as I referred to in the very first paragraph of this treatise. Big farms, as a money making proposition on a large scale, are a failure. In the state of Washington, three to ten acres is the average size small fruit farm. Many are doing more from five acres of small fruit than others are turning from a quarter section of grain lands, which requires not only more capital to purchase but to operate. Hence to the beginner, if you have not got the land, **hike out and get it.** If you can't buy because you have not the price, rent a small place that is adapted for fruit culture, rent for a term of years; never for less than ten years if you can help it, for two reasons. First, the land must be fertilized and fitted up. You improve the property at the start and have time to realize an income from it. Second, you are in a position to hold the premises during the life of your lease or demand a bonus to release it, while on the other hand you are not bound to hold the place as you have bound the owner. Select good location, convenient to market and transportation faculties. **Buy it. Rent it. Get it some way** even if you go way in debt. Then remember that the manure "Bank" is your best bank. Put every cent you can in manure and get in debt for more, if it is necessary, for manure utilized right will pay you a bigger interest within a few years than any money you ever deposited in a bank, providing you are a hustler and stick to your calling in a faithful manner.



5 BERRIES



5 BERRIES

WICK HATHAWAY
"HUNDRED DOLLAR"
50 HOURS AFTER PICKING



21 BERRIES

WM. BELT SAMPLE
CLIMAX AND DUNLAP
2 HOURS AFTER PICKING

GROWN BY

WICK HATHAWAY, MADISON, OHIO.

Two Crops a Year.

I grow two crops a year on my land occupied by strawberries, in this way. The plants set as I have explained, have had or should have had fully a month's start before corn planting time. I then plant corn in hills, two or three kernels each about five or six feet apart in the row with the strawberries. The corn is hoed and cultivated along with the plants and by August the corn has become nearly to maturity and the strawberry plants grow as thrifty as weeds. This is two crops the first year, one each of plants and corn. The second year the fruit is gone by July 1st to 5th. The whole piece plowed and put into potatoes or buckwheat being heavily fertilized, a big yield of either crop can be depended upon. Of course practicing this plan, a new strawberry bed must be set each spring, which is far the easiest to do, between the job of cleaning out and keeping clean an old strawberry bed, and besides, the fruit is far superior from a new bed.

Another way of growing strawberries, which is commendable to those who have limited space, is in barrels, by taking a strong built barrel, an oil or whiskey barrel is just the thing, bore two inch auger holes six inches apart around the barrel, which can be made in several rows between the bottom or ground and the top hoop, then set the barrel where wanted, be it in the yard or on the roof, place a two-inch tile in the center, from the top, letting the bottom end of the tile be about two-thirds of the way down, or say fill the barrel up one-third full of good rich dirt, (any good soil can be made rich by mixing a few shovels full of rotted stable manure with it,) then stand the tile on end in the center of the barrel and pack the balance of the space full of dirt. The plants should be "set" as the barrel is being filled with earth by simply sticking the roots through the holes from the outside, spreading them out as far as they will reach over the earth in the barrel, which of course is filled even to the row of holes the plants are being set through, continuing filling the barrel and setting the plants until the barrel is full of dirt with a plant in each hole round the outside. On the top a half



Strawberry Plants Growing in Barrel.

dozen can also be set. The tile is left to be filled every other day with a bucket of water. From 150 to 200 plants can be cared for in this way and the fruit kept the cleanest. Also by this plan berries can be raised from plants the same season they are set, because it is not necessary to remove the flowers.

Winter Care—Mulching.

As soon as the ground has become frozen, haul out the old straw stack or any good light stuff that is free from seed, and cover the rows lightly. It will be unnecessary to remove a light mulch in the spring, for all plants will shoot up bright and green, and hold the straw, etc., in place.

Commercial Fertilizer.

I use also beside stable manure from 1,000 to 1,500 lbs. of commercial fertilizer, which has 7 to 9 per cent. potash, a 10 to 12 per cent potash will be still better. This should be drilled in when fitting the soil before setting plants. Bone meal may be sown broadcast over the plants in the late fall or early spring to good advantage. Heavy fertilizer, careful cultivation, keeping the ground stirred and the weeds out is a valuable asset to the strawberry grower. Do not neglect the growing plants by non-cultivation, especially in harvest time. Follow my instructions and from 200 to 400 bushels per acre should be your reward.

Picking and Marketing.

Always use clean, new quart boxes and crates. Sort fruit in the field. Each picker should have a stand holding six or eight boxes. The very largest berries put by themselves and the balance or medium sized by themselves. Over ripe berries also should be picked and taken off the patch. Pay for picking all of the berries, leave no old fruit on the patch, unless you intend to plow it over. Your berries picked are in shape for market. The biggest should go to the fancy groceryman or your local private customers, who should be willing to pay a few cents more per quart for such select fruit. The second

grade, if like my productions, is equal, if not superior, to nine-tenths of the fruit put on the market, and will bring the market price anywhere. Grade your fruit as I have explained and find your customers or make arrangements for some retailer to handle your stock. Keep a little advertisement in the local paper during the few weeks of harvest, just stating that your select grown fruit can be found at such a place, etc. You will find this method will yield from 20 to 30 per cent. more than by picking all together, mixing both small and extra large fruit, and often being told perhaps that you have put big berries on top. Never allow your pickers to do this. Pay a fair price for all picking and have it done right. The customary price for picking the average size strawberries, is one and a half cents per quart box. at one cent good pickers can make \$2.00 to \$3.00 per day picking the largest varieties in No. 1 size baskets, providing of course the berries are a good crop. Always insist to have your boxes filled with as good fruit right through as they look on top. Facing the top of the box is a good plan, though it takes a little longer and also takes more berries to fill the box.

Other Small Fruit.

Raspberries, blackberries, currants, gooseberries and grape cultivation does not require so much labor as strawberry culture, but then there are not so many plants set to an acre. I refer the reader to the table given on another page showing the distance plants may be set and the number required to the acre (See 2nd page cover.)

Currants and gooseberries, as a rule, after the third year's growth, if they have done well, require little attention beside cultivation with hoe and cultivator occasionally during the season and spraying a couple of times before the fruit has set. When the old wood shows signs of dying, it should be cut out and burned up.

Grapes will grow on most any soil. For field culture they should be set in rows nine feet apart and not less than seven nor more than nine apart in the row and cultivated first by plowing, then use the horse grape hoe which can be run close to hills to cut out all weeds by first turning the soil away. They must be pruned every winter taking all of the old wood out and leaving but from two to four new

canes. These too should be those that have grown out from near the bottom of the main trunk. For the garden these new canes should be tied to a post, set at each hill, which may have two cross pieces, say from four to six feet long, nailed on the post, one above the other. One may be at the top and the other eighteen or twenty inches below. But in field culture the posts are set about twenty feet apart in the row, the entire length of the row, and have strung on them three lines of wire to which the canes must be tied early each spring. As soon as the foliage has got well started spraying should begin. (See pages 19 to 23 for remedies.)

In growing raspberries and blackberries, however, frequent cultivation is necessary. First, they should be cultivated with horse cultivator and then hand hoed. This done any time after the foliage and fruit has set, then followed within a few days with plowing a back furrow to the row. When this has been done let them alone so far as cultivation until after the berries have been picked. Then the next operation is to at once cut out all old canes and cut back the new woods or canes by just cutting off the tip ends a few inches or a foot if necessary. I say "a foot" only meaning for such canes as have become altogether too high. All canes so treated will immediately put forth new branches and become bushy. I do not advise leaving less than four nor more than six new canes to a hill, especially of raspberries. This pruning back of the canes is particularly necessary for all the varieties of raspberries that take root from "tips" for if the end of the cane is not cut off, it will, instead of making a growth of branches, continue to grow in a long grape vine, like way, become a regular vine, often growing ten or twelve feet in length, falling over to the ground and running across between the rows, a nuisance that not only hinders fall cultivation but foretells a short crop of fruit the following season. When trained to grow on a trellis, as grapes are grown, Raspberries and blackberries do well but this is only advisable in the garden culture. Dewberry culture should be treated much the same as for blackberries and raspberries. But the dewberry is never at its best except when grown to a trellis or tied to a stake drove by each hill. I have not found necessary to spray these last named varieties of small fruit, which after the first year should bear full crops.

Insect Enemies and How to Destroy Them.

I embody herewith brief but plain descriptions of the various insects which attack different classes of trees and plants, and in each case the best known remedy. My directions can be relied upon implicitly, and I need only ask my friends and customers to follow the directions in each case to the letter.

Directions for Preparing the Remedies.

Paris Green or London Purple—These poisons are used either in solution or dry form. In solution one pound is mixed with from 100 to 300 gallons of water, the strength depending on the plant sprayed and the insects to be destroyed. The poison should first be mixed with enough water to form a paste, after which the full quantity may be added. It is always best to add one or two pounds of lime for each pound of green, as the danger to foliage will be much lessened thereby. Paris Green alone is sometimes applied in dry form. It is best, however, to mix each pound with ten pounds of flour or plaster. The liquid is much less objectionable, and I would in all cases recommend it.

Kerosene Emulsion—Take common bar soap, one-half a pound, water one gallon, and kerosene two gallons. Shave the soap into the water, then heat the whole until all the soap is dissolved; add the soap liquid, boiling hot, to the kerosene, and churn for ten minutes by pumping it back into itself; when cool, the emulsion should have the consistency of thick cream or soft butter, this depending somewhat upon the kind of soap used.

Insects Affecting The Grape—The Flee Beetle.

The small, steel blue insect, appears in early spring, and at once begins eating the tender foliage. After eating about a moment the female beetle deposits small yellow eggs on the foliage. These soon hatch into small larvae, which continue the work of destruction.

Remedies—Spray with Paris Green, one pound, and one and one-half pounds lime to 200 gallons of water, as soon as the beetles are noticed. Two applications of this solution, at intervals of a week or ten days, will usually destroy all insects.

The Rose Bug.

It makes its appearance early in the summer, devouring flowers, young fruit and leaves. The beetle is about half an inch long and of a brown color.

Remedies—The best results have followed the use of Pyrethrum, which should be applied in solution at the rate of one ounce to two gallons of water.

Insects Affecting the Grape—The Coddling Moth.

The little white caterpillar, whose affects are so familiar to everyone, is the larvae of a small, nocturnal, gray moth. The moth

deposits her eggs on the blossom end of the fruit. As soon as the eggs hatch the larvae eats its way into the young fruit; the rest of the story is well known to every one.

Remedies—Spray the trees with Paris Green or London Purple at the rate of one pound to 250 gallons of water add one and a half pounds of lime, first when the flowers are falling and again when the fruit is the size of a pea.

The Canker Worm.

This measuring worm eats the green portion of the leaf giving the tree a brownish color, as though scorched by fire. The worm appears in early spring, and when full grown are an inch long.

Remedies—Spray the trees when the leaves are one-third grown, with Paris Green solution, one pound to 200 gallons of water, add one and a half pounds of lime. Usually one spraying will be sufficient, but if the worms appear to be on the increase a second application will be advisable.

Apple Tree Tent-Caterpillar.

The large silken nests made by this insect are familiar to every one. The caterpillars appear in May or June, and in five or six weeks have attained their full size.

Remedies—Cut out and burn the nests as soon as they are seen, taking the precaution to do this in the morning when the caterpillars are all in. This, together with one or two sprayings of Paris Green solutions, having a strength of one pound to 200 gallons of water, and one and a half pounds of lime, will effectually rid the trees of the pest.

The Apple Aphis.

Apple trees are often attacked early in the season by this insect. The lice are quite small and green in color. By sucking the juice from the young growth they greatly interfere with the functions of the latter, and as a result the tree has a sickly, yellow appearance.

Remedies—Spray with kerosene emulsion at the rate of one gallon to twenty of water, as soon as the lice appear. Repeat the treatment in eight or ten days if necessary. A decoction made by soaking over night four or five pounds of tobacco stems, or refuse tobacco of any kind, in five gallons of water, will also be found an excellent remedy against the lice.

The Oyster Shell Bark Louse.

There are frequently seen on the trunks, branches and twigs of the apple tree, small, whitish shells, resembling in shape those of an oyster. Under these shells are numerous small lice busy engaged sucking the sap from the tree.

Remedies—Scrape the tree thoroughly in spring before the

leaves appear and then paint the trunk and limbs with a thick solution made by dissolving one quart of soft soap in half a gallon of hot water. Two ounces of crude carbolic acid added to this will also increase its efficacy. Make no further treatment until the middle of May, when kerosene emulsion, one gallon to twenty-five gallons of water, should be applied, It is always best to apply the emulsion soon after the lice hatch.

Insects Affecting the Peach—The Black Aphis.

Numbers of this small, shiny black insect may be seen in the spring on the leaves and twigs of the peach. The lice often do a great deal of damage above ground as well as below on the roots.

Remedies—For the form above ground, spraying with kerosene emulsion, one gallon to thirty-five gallons of water, is the most effective remedy. The first spraying should be made as soon as the lice appear; if necessary, this should be followed by others at intervals of a few days until the trees are rid of the pest. Under the ground the lice are best destroyed by digging in tobacco stems or dust among the trees. The tobacco is scattered on the ground to the depth of half an inch or more, then dug in with a spade or fork.

Peach Yellows.

This is one of the few diseases as to which very little is positively known, except its effects. It usually makes its appearance about mid-summer, causing the foliage of the trees to turn yellow, and soon thereafter the body and large limbs will throw out a considerable number of weak, yellow leaved suckers. If the tree is loaded with fruit it will be under size, little or no flavor, and ripen prematurely.

Remedies—The moment that you feel sure that a tree is affected with yellow, dig it up root and branches and burn it, and plant any tree that you like, other than a peach tree, in its place.

Insects Affecting the Pear—The Pear Tree Slug.

This insect attacks the leaves, eating away the green portion so that nothing remains but the parchment-like tissues and veins. It appears usually the latter part of June and again in August.

Remedies—Spraying with a simple solution of milk of lime, made by mixing two pounds of lime, in twenty gallons of water, will often rid the tree of this pest. The first application should be made as soon as the slugs are noticed; If necessary, others should follow in a week or ten days. By adding a little Paris Green, say one ounce to the lime of milk, the latter will be made more effectual.

The Scurfy Bark Louse.

This insect resembles the Oyster Shell Bark Louse already described as attacking the apple.

Remedies—The same as for Oyster Shell Bark Louse.

Pear Blight.

It is understood by the best authorities, both practical and scientific, that the cause of the disease is absolutely unknown, and there is but one certain remedy, namely, to cut out the blighted parts promptly, on appearance of the disease, and burn them.

Insects Affecting the Plum—The Curculio.

This little grub originates from eggs deposited by a small, dirty gray beetle, when the flowers are still small.

Remedies—The most reliable way now known of dealing with Curculio is to spray it with Paris Green. The first application should be made when the flowers are falling, using a solution made by mixing one pound of Paris Green in 200 gallons of water, and adding one and a half pounds of lime. In a week or ten days make a second application, and follow this by another after the lapse of same length of time.

The Plum Tree Aphis.

This insect resembles the one occurring on the peach, and like it may be destroyed by spraying with kerosene emulsion, made by mixing one gallon of the concentrated emulsion in twenty gallons of water.

Black Knot.

The most scientific as well as practical fruit growers in the country are by no means agreed as to the cause of Black Knot on plum and cherry trees, but they are entirely agreed as to the only known remedy, namely. Just as soon as the Black Knot appears, cut it out, removing the branches at least two inches below, where the knot appears. Burn the affected parts and follow this method promptly, thoroughly and in most cases, you will have exterminated the disease before it has done serious damage.

Insects Affecting the Cherry.

The cherry is injured by plant lice, resembling those occurring on the peach or plum. The Pear Tree Slug also attacks the leaves, while the fruit is infested by the plum Curculio.

Remedies—The remedies given under peach and pear insects should be adopted in this case.

Black Knot.

Cherry trees are affected with Black Knot the same as the plum trees, and the same remedies should be used.

Insects Affecting the Currant and Gooseberry — The Currant Worm.

The perfect form of the worm is a small fly, which lays its eggs on the leaves in the early spring. As soon as the egg hatch

the worms eat circular holes in the foliage. As the worms increase in size, they become more voracious, often riddling the leaves.

Remedies—As soon as the worms are seen, spray the plants with a solution made by mixing one ounce of Hellebore in two gallons of water.

The Currant Aphis.

The insect attacks the leaves, causing them to curl and turn brown. The lice are usually abundant in early summer, but as hot weather advances they disappear.

Remedies—Spray with kerosene emulsion, one gallon to twenty gallons of water, as soon as the lice are noticed.

Insects Affecting the Rose.

The Rose Bug—The same as sometimes attacks the grape.

Remedies—The same.

The Green Aphis—The same that attacks the apples.

Remedies—The same.

The Black Aphis—The same that attacks the peach and other trees.

Remedies—The same.

Insects seldom attack the strawberry, and I have never found it necessary to spray, though some growers do. In such events use such preparations as the case requires and at times before fruit has set.

A Home Made Mixture.

For general spraying, take ten lbs. unslacked lime to two lbs. of sulphur. Put warm water on the mixture and set over a steady fire and boil for one hour, stirring occasionally to thoroughly mix, using enough water in boiling to thin the mixture to about that of molasses. Use one gallon of the mixture to ten gallons of water. This makes an excellent spray for fruit trees or any sorts of fruit. Applying first just about the time buds are starting and again within two weeks. This is a cheap home made mixture that will do the business.

San Jose Scale.

San Jose Scale can be effectually treated with any of the stronger remedies used in spraying—but the best treatment is to dig all the effected trees out and burn them.

"Valuable Pointers."

1. DON'T GET THE HABIT of borrowing or lending tools.
2. DON'T GET THE HABIT of exchanging labor etc.—hire your extra labor and demand pay for labor given.

THESE DONT'S insure neighborly friendship and keep you YOUR OWN BOSS.

3. I DON'T ADVISE anyone building expensive poultry houses at the start. It is a never failing indication of an early failure, when you see an inexperienced cityman move to the country and start farming by first repairing old buildings or building new, when it is not necessary. A good fruit and poultry farm managed right, should produce a surplus within a few seasons sufficient to build as the owner may find by experience his want requires.

4. I DON'T ADVISE the purchase of a team of horses and impliments required for a team, unless on a large scale, as one good horse should do all except necessary team work, on an ordinary ten to thirty acre fruit farm, and take your family to church on Sunday too. The team work necessary can be hired during the season or year for much less then the cost to keep a team, let alone the wear and tear and repair expenses on impliments, etc. Let the teamster have this.

5. I DON'T ADVISE anyone to resign a GOOD, steady position with GOOD SALARY to go into the poultry and fruit farming unless they have had experience OR HAVE A LITTLE CAPITAL TO START WITH. Better start small in your city back yard and hold the job.

6. I DO ADVISE the purchase of all the stable manure that can be had even if one has to go in debt for it. Some commercial fertilizer too will be a good investment. A highly fertilized soil annually cropt from good plants and seed is the biggest dividend payer that grows out of the ground. I believe the contents of this page are worth up to \$1,000 to any fruit or truck grower who has not practiced similar rules, and who stay by the farm.

Yours truly,

WICK HATHAWAY.



My Books.

Wick Hathaway's sixty cent poultry class books, cover all breeds of each class treated, including accurate color descriptions of the little chickens of each variety when hatched. No other sixty cent book published on a single class covers more than one breed of that class, and none ever described the color of the chick from the shell to maturity. For instance we have a book on Plymouth Rocks, a book on the Wyandottes, all belong to the American class, at a cost of 50 cents for each book. My book on **The American Class**, covers all the above besides also including Rhode Island and Buckeye Reds, Dominiques and several new standard American varieties at sixty cents. The same may be said of my Mediterranean class book, all varieties of the class are described in one book. Illustrated by America's leading artists. 56 of the full paged drawings selected for the whole series, are valued at \$1,650.00 for the drawings alone. These illustrations are full page, size $4\frac{1}{2} \times 7\frac{1}{2}$ inches.

These books are taken from my forthcoming illustrated work on poultry, covering ten leading classes in six parts. The set will be a complete and comprehensive work, a companion to the standard, but larger. Published in parts, it is designed to meet the requirements of the masses as well as the specialist fancier at a moderate price. Those now being published are **The American Class, (Part 1.)**—Covering all varieties of the class as above explained. Price 60 cents postpaid.

The Mediterranean Class, (Part 4) — Covers Anconas, Andalusians, Leghorns, Minorcas and Spanish. Price 60 cents postpaid.

Small Fruit Culture With Poultry,—(this book)
—Revised edition. Price 38 cents per copy postpaid.

Special Notice.

The Material—All books have embossed covers and are printed on a high class calendared book paper. They can be ordered through publishers of the leading Agricultural, Horticultural or Poultry papers or from me direct.

Yours truly,
The Author, WICK HATHAWAY.

Axioms.

**“A small farm well tilled, a big
purse well filled.”**

—Hathaway

**“He who makes two blades grow
where formerly there was one,
is a public benefactor.”**

—Franklin